# Advisor Advanced Pedestrian System (AAPS) User's Manual

## 906-0005

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# AAPS User's Manual

# 906-0005

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# 2 Introduction

## 2.1 Purpose of this Document

The purpose of the document is to describe the operation of the Advisor Advanced Pedestrian System (AAPS).This document doesn't cover the installation of the AAPS.

## 2.2 Additional Information

- See the AAPS Installation Guide for installation instructions.
- Reference the Campbell Company Intersection Worksheet for location specific information.
- Set the AAPS Installation Quick Guide for a brief graphical installation guide.
- See the Base Station Mounting Template for an easy to use hole pattern for mounting APBs.

## 2.3 Contact Information

The first line of contact should be the distributor that the system was purchased from. If you are unable to contact the distributor, contact Campbell Company directly.


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# 3 Overview

## 3.1 Product Overview

The AAPS is an Accessible Pedestrian Signal (APS) based on network communications. Communication from the traffic controller cabinet to the pedestrian station is done over two conductors. Power for the pedestrian stations is also provided on the same two conductors. In many cases, the two conductors are already at the intersection from the previous pedestrian system.

The AAPS uses a webpage based interface to manage and monitor the system. This webpage can be viewed on any device with a network connection to the APC. Desktop computers, laptops, and even handheld devices can connect and operate the system as long as they share a network connection.

The AAPS provides all of the standard features for an APS as defined by the MUTCD as well as additional features based on local specifications. A locator tone tells a pedestrian that the crossing is equipped with APS and where it can be found. An extended press provides specific intersection information and access to additional functions. The audible walk tone or message is accompanied by a vibro-tactile indication during the visual walk display. Optional clearance phase indications may provide additional information to the pedestrian where appropriate.

Each AAPS is pre-configured at the factory based on the documentation provided by the customer. Configuring the AAPS can be done entirely though the APC management webpage, so the customer can re-configure the system as needed.

Campbell Company cannot guarantee the AAPS will work properly with all existing field wiring, especially if a single common to the buttons and signal lighting is shared. Each case will have to be tried and proven because it depends on the condition of the wires, splices, etc. In the event there are no field wires, AAPS can be swapped out for an alternative as long as there is no damage to the AAPS units.

## 3.2 Features

- Capable of using existing pedestrian field wiring to provide power and communication to the push button stations reducing costs in retrofit installations
- Ethernet access for remote communication
- All configurable settings available over network via webpage including audio message upload
- Time of day functions including night time audio volumes
- Pedestrian call count data
- Independent volumes for locator and non-locator audio messages
- Station independent volumes
- Automatic Gain Control (AGC) available for all audio messages
- Accepts any audio message in WAV format


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- Audio messages and station configuration backed up on the APC enables quick recovery after a station knock-down
- Clearance interval options including beaconing and audible countdown
- Preemption options available

## 3.3 Components

There are three primary components to the AAPS; the Advanced Pedestrian Controller, a Termination Board, and one or more Advanced Pedestrian Button (APB).
The APC is the center point of the AAPS. It provides both power and pedestrian signal information to all of the APBs. The APC is also the point at which the system is configured. The APC is located in the traffic controller cabinet. It connects to the 120VAC load switch outputs for the pedestrian signals and the low voltage pedestrian call inputs.
The Termination Board is located in the traffic controller cabinet with the APC. It provides a convenient place to land all of the field connections to the APBs. The Termination also provides current protection to each field connection individually.
The APB is the point of interaction with the pedestrian. The APB is available in several form factors including:

- Base Station: A fully integrated pedestrian station
- 400(A): A station designed to drop into a 400 style frame

In addition to different form factors, the stations are available in a wide range of colors.

## 3.4 Audio Messages

The AAPS comes fully programmed with audio files from the factory but we give you the option to create your own custom messages in a simple .wav format that can be easily uploaded via the APC network connection. Second languages, gender narrative, and special percussive tones can be easily created and uploaded.

*Figure 1. Base Station*


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# 4 System Configuration

## 4.1 Accessing the Webpage

To make changes and view the AAPS webpage simply plug an Ethernet cable into the Ethernet port on the front of the APC. Then connect the Ethernet cable into your laptop.
Start up a web browser such as Google Chrome and type in the IP 192.168.1.101 into the address bar. (See Below)

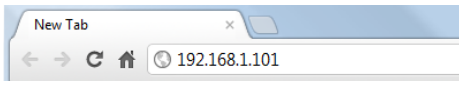


*Figure 2 Webpage Address bar*

You will see the following screen pop up looking for credentials. Default user name: admin Password: password.

*Figure 3 Authentication Page*

## 4.2 Main Screen

The first screen is shown below it gives the status of the pedestrian system (figure 4.)
To view this screen click "Here" to enable real time status

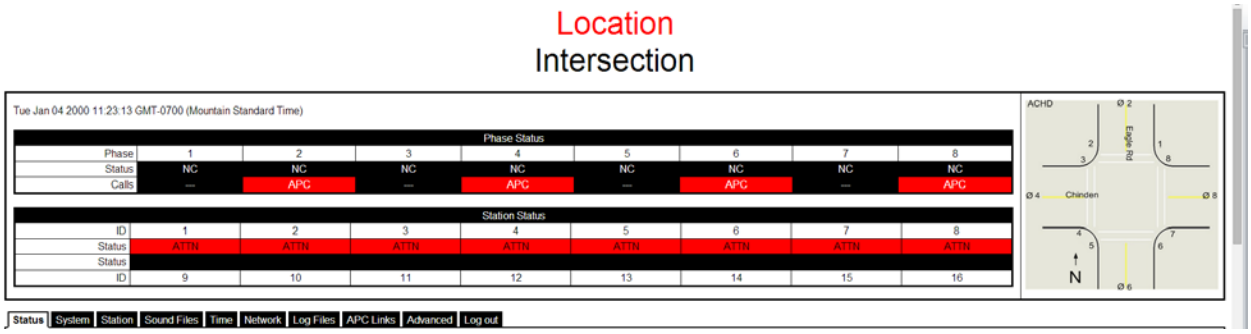


*Figure 4 Status Page*

The Pedestrian Signal Status shows the state of the Signal (DW, FDW, W) and if a call has been placed. Stations Status bar will show a state of the stations;
The *Status* tab gives an overview of the system.
The *System* tab allows for global settings to be adjusted.
The *Station* tab allows for individual station settings to be adjusted.
The *Sound* tab allows for audio files to be changed.
The *Network* tab allows for changes to the APC IP address.
The *Time* tab allows for the time to be adjusted.


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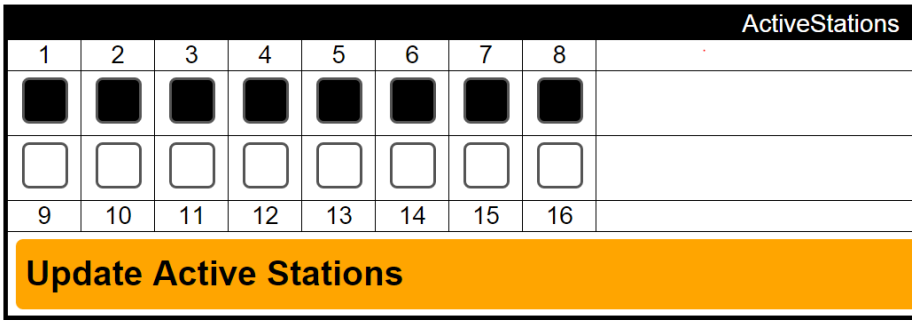
The *Log Files* tab is where log files are located
The *APC Links* tab allows for all APC's IP addresses to be stored
The *Advanced* tab is where advanced settings can be found.
*Log out* tab logs you out of the system.

# 4.3 Making Changes

## 4.3.1 System Changes

System Tab: This tab is where changes are made to the entire system

a.



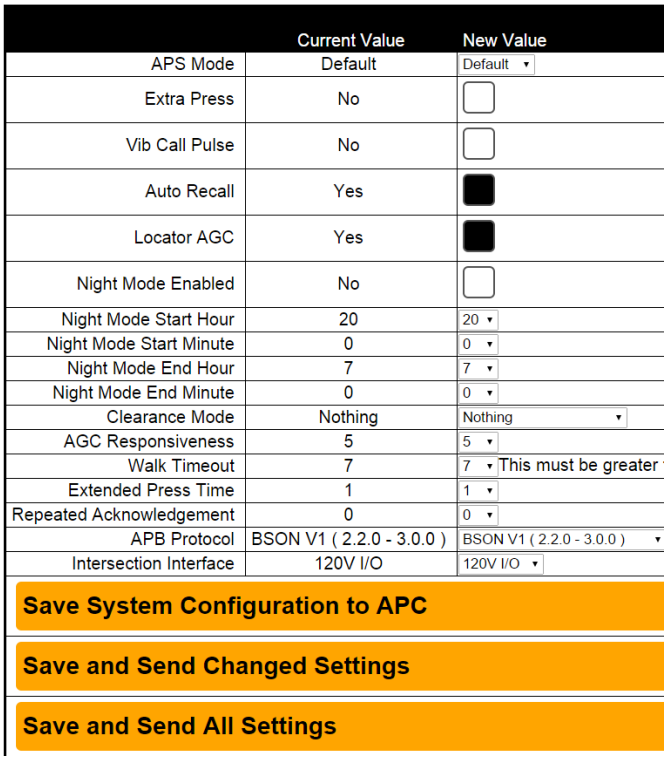




*Figure 5*

a. The check boxes at the beginning signify what stations are active. To add a station, click the checkbox and it will add more stations to the system (figure 5.) Black means checked, white means unchecked.
b. AAPS mode: 4 options; Off, Default, EP APS, and Identify (figure 5.)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i. Off behaves like a typical button, places calls, no Audio
ii. Default is normal APS operation
iii. EP APS only actuates APS audio when an extended press is placed
iv. Identify will put the APB's into a mode where their LED's will blink the assigned station ID (troubleshooting)

c. Extra-press mode: places two calls to the traffic controller one for current cycle and one for following cycle
d. Vib Call Pulse: Allows for vibrotactile feedback when the button is pressed
e. Auto Recall: When checked constant calls will occur if a button is at ATTN
f. Locator AGC: When checked locator AGC will be enabled. If un-checked locator tone will be constant
g. Night mode: Check the box to enable and then set the time for the hours that you would like to adjust the volume differently
h. Clearance mode: 5 options Off (no Beaconing), Ping Pong, Dest/Init beaconing and Audible countdown.
    i. Destination beaconing implements beaconing (only the destination APB will beacon in the clearance phase)
    ii. Initiation beaconing implements beaconing at the initiation station only.
    iii. Audio Countdown: audible countdown will be enabled
    iv. Ping-Pong: Buttons on each side of the street will alternate in FDW
i. AGC responsiveness: Adjusts how quickly the ambient gain responds. (1-20, 20 least responsive)
j. Walk message Timeout: Refers to a rest in walk situation, adjusts the time the walk message will timeout without being interrupted by the flashing don't walk.
k. Extended press time: Adjusts the length time required to place an extended press or APS call.
l. Repeated Acknowledgement: Number of seconds between each repeated acknowledgement message (0 means no repeat)
m. APB Protocol: BSON V1 (2.2.0 -3.0.0) is the default setting. If buttons are not communicating try setting to the older version (1.5.1-2.1.0)
n. Intersection Interface: Default setting is 120V I/O. This setting can be changed to Simulator only when in a benchtop testing application. Setting should remain at 120V I/O or pre-timed values will run for Walk and Don't Walk.
o. "Save System Configuration to APC" button: Will save all changes to APC
p. "Save and Send Changed Settings" button: Will Save and send only changed settings.
q. "Save and send All settings" button: Will send all settings.


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## 4.3.2 Changing Station Settings

The most common changes will have to do with the Station tab Shown Below.

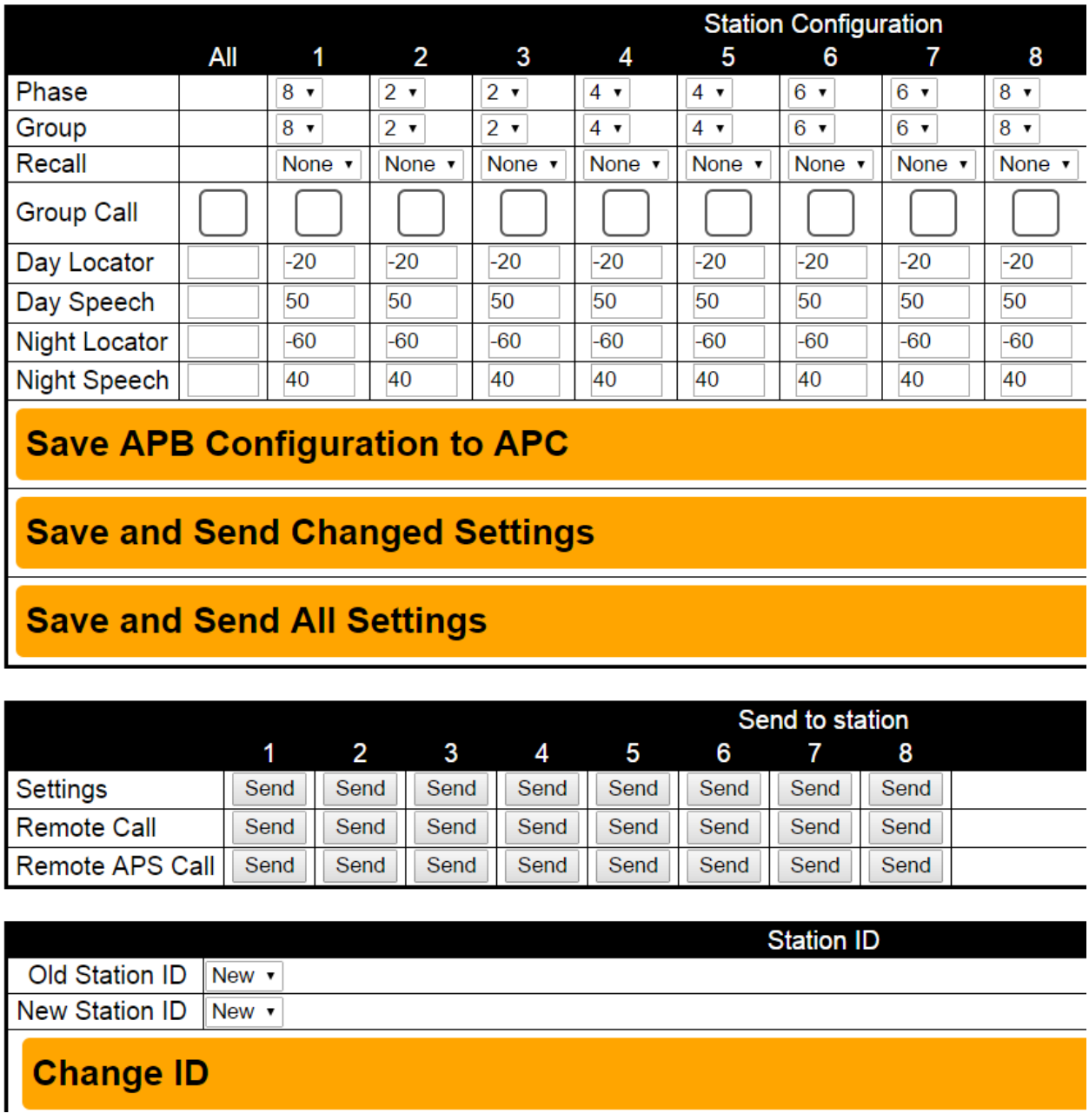
Station Configuration
All 1 2 3 4 5 6 7 8
Phase 8 2 2 4 4 6 6 8
Group 8 2 2 4 4 6 6 8
Recall None None None None None None None None
Group Call
Day Locator -20 -20 -20 -20 -20 -20 -20 -20
Day Speech 50 50 50 50 50 50 50 50
Night Locator -60 -60 -60 -60 -60 -60 -60 -60
Night Speech 40 40 40 40 40 40 40 40
Save APB Configuration to APC
Save and Send Changed Settings
Save and Send All Settings
Send to station
1 2 3 4 5 6 7 8
Settings Send Send Send Send Send Send Send Send
Remote Call Send Send Send Send Send Send Send Send
Remote APS Call Send Send Send Send Send Send Send Send
Station ID
Old Station ID New
New Station ID New
Change ID

*Figure 6 Station Tab*

All active stations will be shown in this tab.

To change the Signal (phase) of the button, change the Phase number.

To change the group of the button, change the Group number

To change the volume level, enter a number between -300 and +300. Defaults are shown above.

In order to make the changes permanent click:


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a. "Save APB Configuration to APC" button: Will save all changes to APC
b. "Save and Send Changed Settings" button: Will Save and send only changed settings to the buttons.
c. "Save and Send All settings" button: Will send all settings.

Buttons with ID's can be changed back to "new." Simple change old station ID to be the ID of the button you want to be "new" leave New station ID at New and click "Change ID".

### 4.3.3 Changing Audio files

The Sound File tab allows for audio files to be uploaded to individual stations.

a. First add sound files to the file system. Click Choose Files/ select them/ then click "Upload to APC."
b. Next find the message that you will be changing the audio files on.
c. Simply click on the dropdown box and select each audio file for each message on each station slot (figure 8)
d. Click the Red "Send" button in the matrix (figure 7) to send all audio files to the ped stations.
e. Message that is to be sent is on the left. "All messages" button is one from the bottom and in Orange. If you want to send all messages to a single station select the All Messages orange "send" button at the bottom. If you want to send a specific message to all stations, click the All Stations orange "Send" button at the right.

| Message | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | All Stations |
|---|---|---|---|---|---|---|---|---|---|
| Locator | Send | Send | Send | Send | Send | Send | Send | Send | Send |
| Acknowledgement | Send | Send | Send | Send | Send | Send | Send | Send | Send |
| Location | Send | Send | Send | Send | Send | Send | Send | Send | Send |
| Walk | Send | Send | Send | Send | Send | Send | Send | Send | Send |
| Destination Beacon | Send | Send | Send | Send | Send | Send | Send | Send | Send |
| Initiation Beacon | Send | Send | Send | Send | Send | Send | Send | Send | Send |
| Preempt | Send | Send | Send | Send | Send | Send | Send | Send | Send |
| All Messages | Send | Send | Send | Send | Send | Send | Send | Send | Send |
| Countdown | Send | Send | Send | Send | Send | Send | Send | Send | Send |

*Figure 7 Audio send Matrix*


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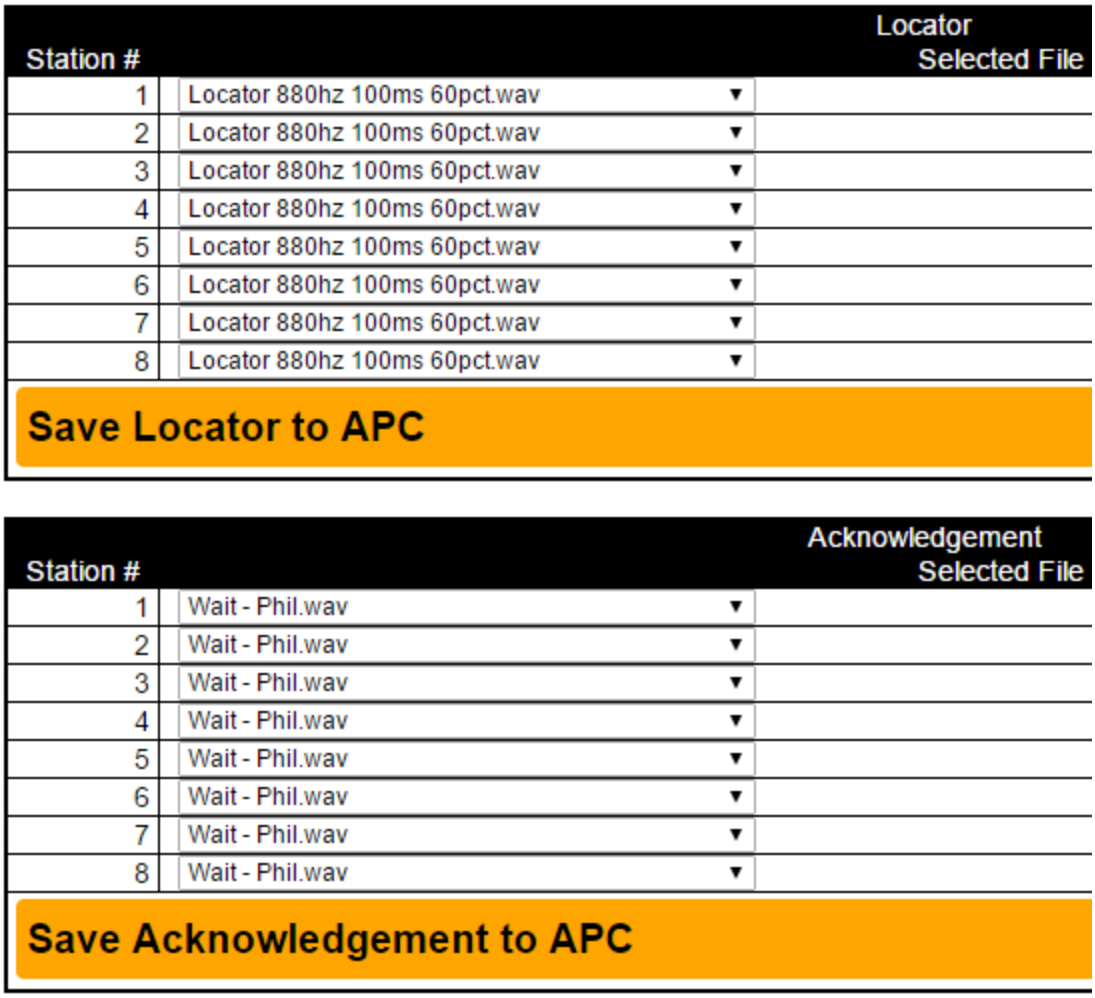


*Figure 8 Setting up audio files*

### 4.3.4 Changing APC IP

In order to remotely communicate with the APC the IP address must be set up.

a. Before changing settings consult you IT Department. Also, remember that the IP address is how access is granted to the webpage. If the IP address is changed document it! If IP address is lost hold B1 Button on front of APC and boot (turn on the unit.) IP will be reset.


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**The system must be rebooted for network changes to take effect.**

Network Configuration

| | Current Value | New Value |
|---|---|---|
| Hostname | apc | apc |
| DHCP | None | None |
| IP Address | 192.168.42.123 | 192.168.42.123 |
| Netmask | 255.255.255.0 | 255.255.255.0 |
| Gateway | 192.168.42.1 | 192.168.42.1 |
| Broadcast | 192.168.42.255 | 192.168.42.255 |
| DNS Server | 8.8.8.8 | 8.8.8.8 |
| Ping Destination | | |
| Ping on Boot | No | ☐ |
| Ping on Hour | No | ☐ |

**Submit Network Configuration**

*Figure 9 Network Tab*

### 4.3.5 Setting the Time

The Time tab is used for setting up the Real Time clock

There are two ways of setting the time:

a. NTP enable or getting the time from the internet. Note: the APC must be able to access to the network and an IP address must be entered in the NTP server box.
b. The time can be set by clicking Submit Time configuration or the Day Month and Year can be manually entered.

Once the time options are chosen click Submit Time configuration.

**Submiting the time will log you out of the webpage**

Time Configuration

| | Current Value | New Value |
|---|---|---|
| Time | January 29th 2015 12:30:52 | January / 29 / 2015 12 : 30 : 52 America/Boise |
| NTP Enabled | No | ☐ |
| NTP Servers | "" | |

**Submit Time Configuration**

*Figure 10 Time Tab*


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### 4.3.6 Viewing Log Files

There are three sets of logs to be viewed: System log, Event log, and APB log.
System logging reports changes made to the system.
Event logging reports any conflicts and/or loss of station communication
APB log reports ped call counts by hour by station #

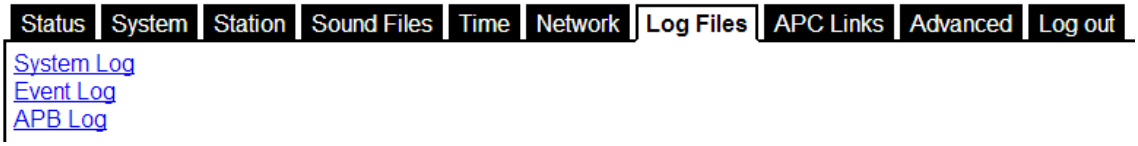


*Figure 11 Log File tab*

### 4.3.7 Configuring the APC Link Tab

APC links tab will keep track of all the APC's on the network on one APC.

1. Make sure the network APC is viewable on the network.
2. Enter a Name or the location of the network APC
3. Type in https:// in the **URL** box then the IP address of the network APC
    a. Example: http://192.168.1.101
4. Click **Add**
5. Click the new link to make sure it links to the network APC

*Figure 12*


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## 4.3.8 Configuring the Advanced Tab

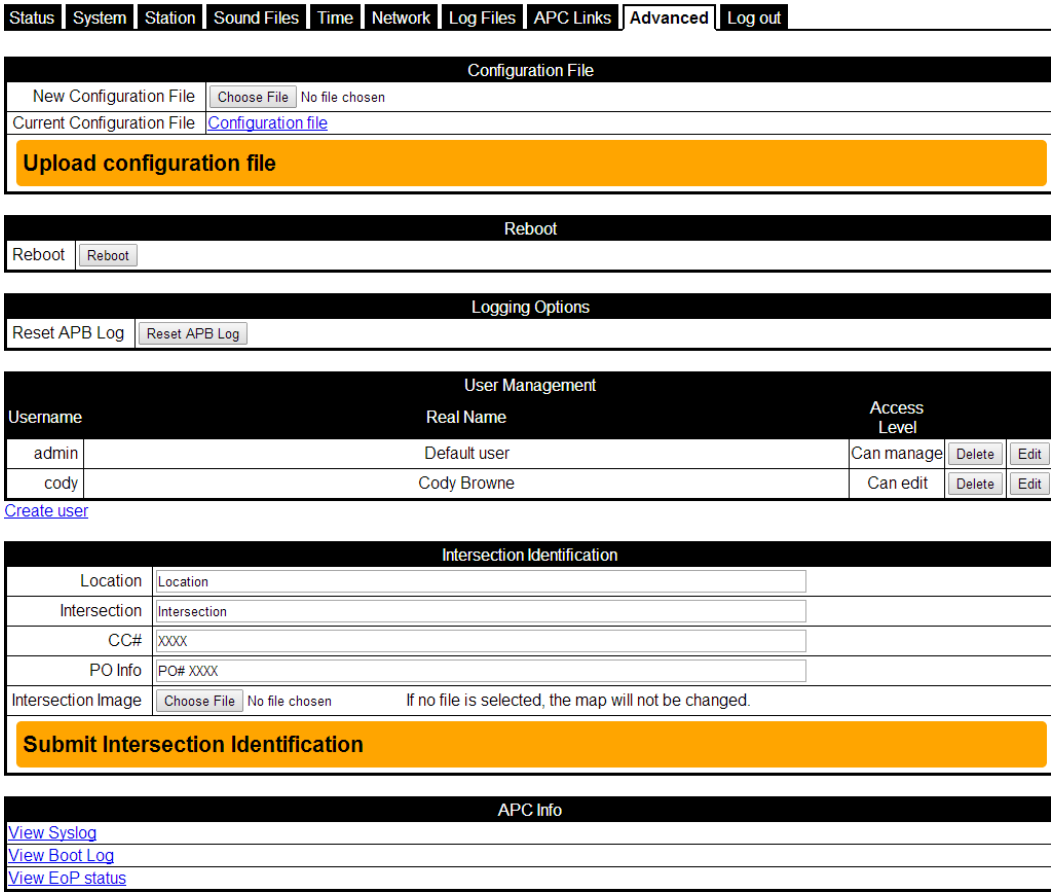


*Figure 13*

1. New Configuration file is able to be uploaded to the APC. Older versions may not work.
2. Reboot button will do a software reboot. Must be done to set time and IP address for the APC.
3. Reset APB log. This will clear the button log files.
4. Additional users can be created
    a. Change password: click on edit user: Will reset the password on the AAPS webpage **(Remember what you changed it to! Mark it on Intersection Planning Sheet and store in cabinet Doc Sleeve.)**
5. The intersection identification can be found here:
    a. Location Example: Boise ID
    b. Intersection: Example: 1st at Main
    c. CC# (order #) 1234
    d. PO #
    e. Intersection image can be selected here and then click "Submit Intersection Identification" to update APC
6. APB Memory allows the user to wipe the button memory completely, view files stored on the button and also view firmware. (figure 14)


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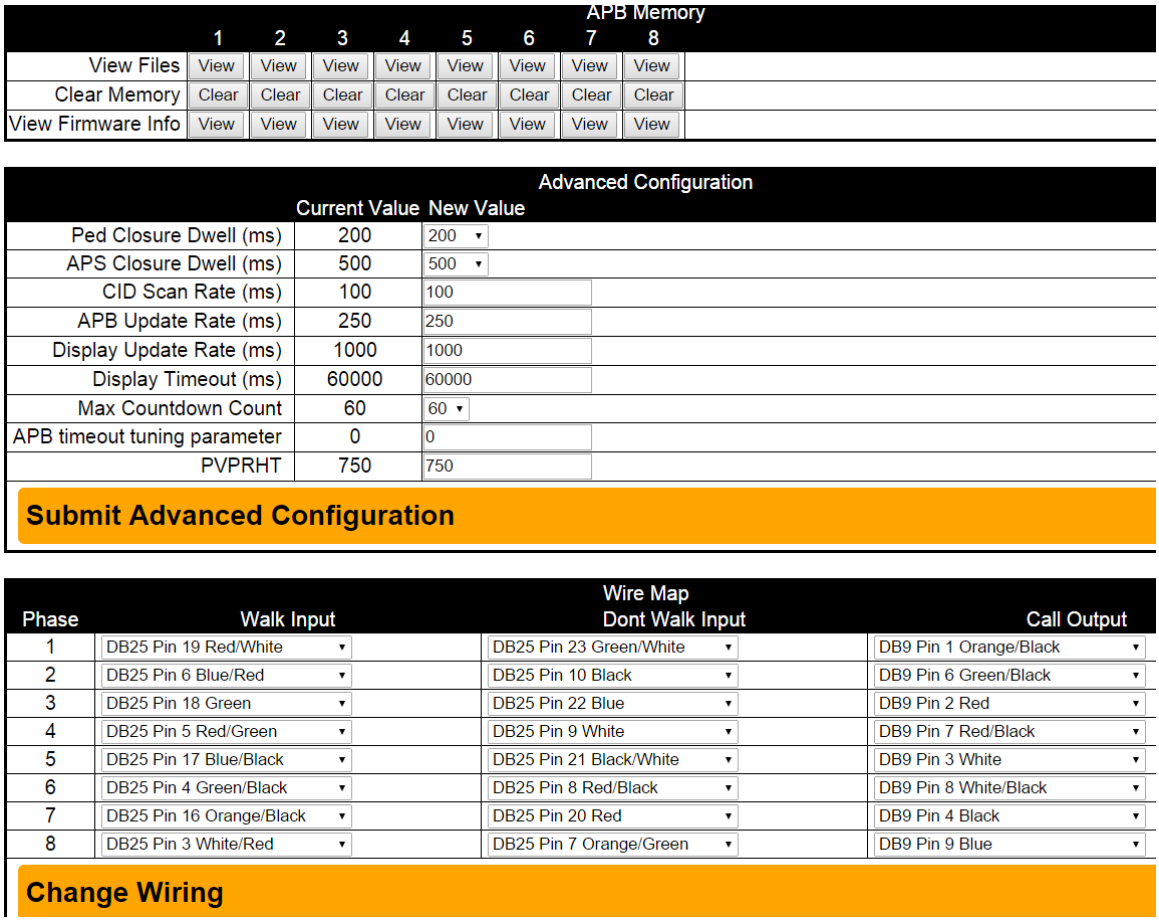

APB Memory

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| View Files | View | View | View | View | View | View | View | View |
| Clear Memory | Clear | Clear | Clear | Clear | Clear | Clear | Clear | Clear |
| View Firmware Info | View | View | View | View | View | View | View | View |

Advanced Configuration

| | Current Value | New Value |
|---|---|---|
| Ped Closure Dwell (ms) | 200 | 200 |
| APS Closure Dwell (ms) | 500 | 500 |
| CID Scan Rate (ms) | 100 | 100 |
| APB Update Rate (ms) | 250 | 250 |
| Display Update Rate (ms) | 1000 | 1000 |
| Display Timeout (ms) | 60000 | 60000 |
| Max Countdown Count | 60 | 60 |
| APB timeout tuning parameter | 0 | 0 |
| PVPRHT | 750 | 750 |

Submit Advanced Configuration

Wire Map

| Phase | Walk Input | Dont Walk Input | Call Output |
|---|---|---|---|
| 1 | DB25 Pin 19 Red/White | DB25 Pin 23 Green/White | DB9 Pin 1 Orange/Black |
| 2 | DB25 Pin 6 Blue/Red | DB25 Pin 10 Black | DB9 Pin 6 Green/Black |
| 3 | DB25 Pin 18 Green | DB25 Pin 22 Blue | DB9 Pin 2 Red |
| 4 | DB25 Pin 5 Red/Green | DB25 Pin 9 White | DB9 Pin 7 Red/Black |
| 5 | DB25 Pin 17 Blue/Black | DB25 Pin 21 Black/White | DB9 Pin 3 White |
| 6 | DB25 Pin 4 Green/Black | DB25 Pin 8 Red/Black | DB9 Pin 8 White/Black |
| 7 | DB25 Pin 16 Orange/Black | DB25 Pin 20 Red | DB9 Pin 4 Black |
| 8 | DB25 Pin 3 White/Red | DB25 Pin 7 Orange/Green | DB9 Pin 9 Blue |

Change Wiring

*Figure 14*

7. Ped Closure Dwell: Time in (ms) the contacts will closed to the traffic controller to signify a normal press was made.
8. APS Closure Dwell: Time in (ms) the contacts will closed to the traffic controller to signify an extended press was made.

**Any changes to the advanced configuration should only be done at the direction of Campbell Company.**

9. CID scan rate: How often the I/O is read.
10. APB update rate: How often the buttons receive an update.
11. Display Update rate: How often the Front panel display is updated.
12. Display timeout: Time before the front panel display times out (shuts off)
13. Countdown Number: How many audible numbers to send to stations
14. APB Timeout tuning parameter: Sets time to display a station as "ATTN"
15. PVPRHT: Timeout for enabling button after vibration has ceased
16. Wire map: The wire mapping can be changed
    a. Walk input: Able to choose phase assignment of pins by color code.
    b. Don't walk Input: Able to choose phase assignment of pins by color code.
    c. Call output: Able to choose what Pin/wire will place a call on a certain phase.


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# 5 Troubleshooting

The following chapter discusses troubleshooting the AAPS system in three parts: APC, Running Patches and APB.

## 5.1 APC Troubleshooting

1. Check Status light on front panel of the APC (RED and Green). Both should be blinking, RED at a fast speed signifying communication with the buttons, and Green at a ½ second rate.
    a. If LED light's (green/red) have stopped blinking (solid on/off) Contact Campbell Company for assistance.

*Figure 15 LED's/ Screen*

    b. Status screen showing buttons that are running (up arrows) and buttons that are not communicating (down arrows.)
2. No Communication to APC
    a. Check computer's IP address
        i. Hold Windows key+ R and then type in "cmd" and hit enter

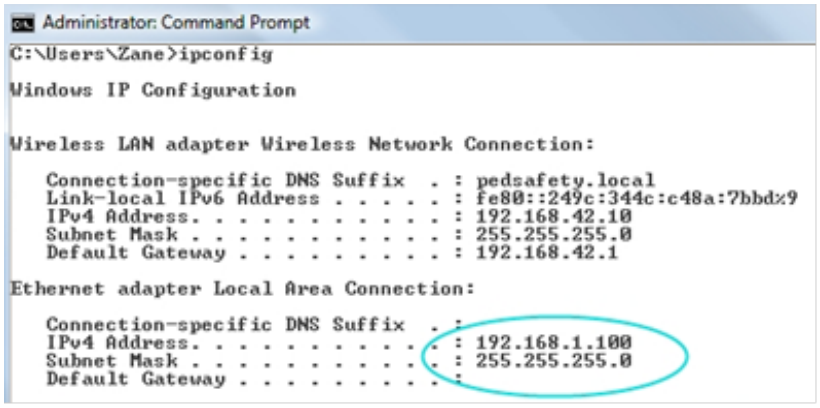
Administrator: Command Prompt
C:\Users\Zane>ipconfig
Windows IP Configuration
Wireless LAN adapter Wireless Network Connection:
Connection-specific DNS Suffix . : pedsafety.local
Link-local IPv6 Address . . . . . : fe80::249c:344c:c48a:7bbdx9
IPv4 Address. . . . . : 192.168.42.10
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.42.1
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . :
IPv4 Address. . . . . : 192.168.1.100
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :

*Figure 16 Showing connection and IP address*

        1. A prompt will appear (figure 13)
        ii. Type *ipconfig* and hit Enter
        iii. Look at local area connection


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iv. Make sure IP has the first same three octets (192.168.1) and the last octet is not the same as the APC's (101) OR that it is not 255 or 1.

b. Type the APC's address in web browser ie: 192.168.1.101

c. If no connection check for LED on computer's Ethernet port

i. Also can try "pinging" APC

ii. Open Command prompt (type cmd in the search bar and hit enter)

iii. Type *ping 192.168.1.101* then Enter

iv. The APC will reply if the computer IP is configured properly

## 5.2 Running a Patch

1. Make sure there is communication with the APC (see above)
2. Download patch folder from Dropbox and Extract All (right click and choose the option below)
3. Open patch folder (the unzipped one) and open the ips text document
    i. Add the IP address of the APC unit in the ips text doc and save
4. Double click on patch (windows batch file)
5. Click yes to any warnings
6. Once the patch is done it will say "Press any key to continue"

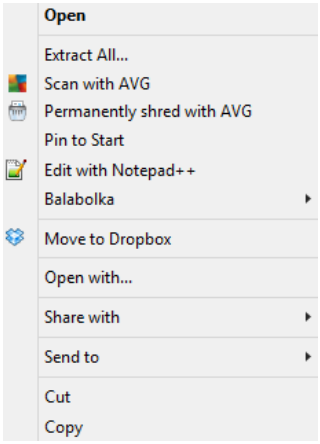


*Figure 17 Extracting Patch*

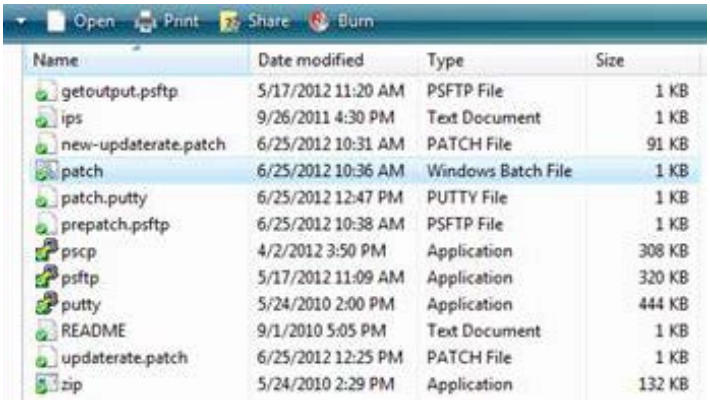
Open
Print
Share
Burn
Name
Date modified
Type
Size
getoutput.psftp 5/17/2012 11:20 AM PSFTP File 1 KB
ips 9/26/2011 4:30 PM Text Document 1 KB
new-updaterate.patch 6/25/2012 10:31 AM PATCH File 91 KB
patch 6/25/2012 10:36 AM Windows Batch File 1 KB
patch.putty 6/25/2012 12:47 PM PUTTY File 1 KB
prepatch.psftp 6/25/2012 10:38 AM PSFTP File 1 KB
pscp 4/2/2012 3:50 PM Application 308 KB
psftp 5/17/2012 11:09 AM Application 320 KB
putty 5/24/2010 2:00 PM Application 444 KB
README 9/1/2010 5:05 PM Text Document 1 KB
updaterate.patch 6/25/2012 12:25 PM PATCH File 1 KB
zip 5/24/2010 2:29 PM Application 132 KB

*Figure 18 Patch*

# 5.3 APB Troubleshooting

When troubleshooting button problems, first start by bringing up the APC's webpage.

## 5.3.1 APB Communication issues

1. First check voltage on the APB. Should be 16-18 VAC.
    a. If Voltage is at ~4 VAC the fuse has tripped.
    b. If Voltage is at 0 VAC it is possible lightning has destroyed the termination board fusing. Check for short. Warning this may cause APC to shut off.
    c. Power cycle and check voltage. If fuse trips again disconnect button and power cycle. Voltage correct?


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    1. Yes →Replace button
    2. No→Ohm wiring for shorts
2. If APB is not communicating you will see ATTN and a red light in the station box (webpage) or a down arrow on the station number (front screen). Start up the station tab on the APC.
3. If the station that has lost communication is station 1 then the first step would be to try changing the station number. Set up the Change Station ID to the figure shown below and click change. If the button's ID is zero it will come back up in 15 seconds.
4. If an error "button not found" is displayed go to the System tab and uncheck the station that is not communicating. (Meaning remove the button from the system.) Then click submit changes.
5. Wait for approximately 30 seconds
6. Ctrl-r will refresh the page. Next go back to the system tab and click the station back into the system. Click **Submit System Configuration**.

### 5.3.2 Calls placed on two phases

1. If one button press places calls on two phases check the grouping (Station Tab). This usually means a grouped button is on an improper phase.(figure 19)
2. To fix, simply change the grouping to be correct.
3. Typically all buttons on a phase are grouped together

| | 1 | 2 | 3 |
|---|---|---|---|
| Phase | 8 | 2 | 2 |
| Group | 8 | 2 | 2 |
| Recall | None | None | None |
| Group Call | ☐ | ☐ | ☐ |
| Day Locator | 20 | -20 | -20 |
| Day Speech | 50 | 50 | 50 |
| Night Locator | -60 | -60 | -60 |
| Night Speech | 40 | 40 | 40 |

*Figure 19 Station Settings*


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# 6 Appendix A: Acronyms, Abbreviations & Definitions

| Term | Meaning |
|---|---|
| Accessible Pedestrian Signal (APS) | A device that communicates information about pedestrian timing in a non-visual format such as audible tones, verbal messages, and/or vibrating surfaces (MUTCD) |
| Actuated operation | A type of traffic control signal operation in which some or all signal phases are operated on the basis of actuation (MUTCD) |
| Audible Beaconing | Use of sound source to provide directional orientation and alignment information. |
| Automatic Gain Control (AGC) | An APS volume control that is automatically responsive to ambient (background) sound. |
| Base Station | Fully integrated APS station that contains the Mico-controller, push button, speaker, adapter plate |
| Crosswalk | Any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines of other marking on the surface (MUTCD) |
| DHCP | Dynamic Host Configuration Protocol |
| EoP | Ethernet over Powerline |
| Night Mode | Ability to change audio volumes by time of day |
| Phase | Pedestrian Signal Designation |


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